

Risk Assessment and Environmental Security: Summary of the NATO Workshops in Eilat (2004) and Greece (2005)

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*NATO ARW
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ARW Goals

- **Summarize state-of-the-science in areas related to Port Security**
 - Summary presentation during the workshop
 - Summary Chapters after the workshop
 - Book based on the workshop
- **Identify problems and propose solutions/ analytical methods**
 - Risk Assessment
 - Decision Analysis
- **Establish collaborative teams and possible projects (including NATO ARWs)**
- **Have Fun!**





Previous Meetings

- **2000 – Lisbon, Portugal**
 - Risk Assessment and Management; Application in developing countries
 - WGs: RA methods, RA tools, Environmental Management
- **2002 – Anzio (Rome), Italy**
 - Comparative risk assessment (CRA); Applying CRA to Middle Eastern environmental problems
 - WGs: CRA, CRA and Decision making
- **April, 2004 – Eilat, Israel**
 - Environmental Security and Risk Assessment, applications in Middle East
 - WGs: Environmental Security, Risk Assessment and Decision Analysis
- **June, 2004 – Palm Beach, Florida USA**
 - Decision-making for contaminated sediments
 - WGs: Comparative risk assessment; MCDA; Technology innovation
- **2005 – Thessaloniki, Greece**
 - Environmental security in coastal areas
 - 3 workgroups: Risk assessment & security; navigation/contaminated sediments; invasive species & coastal restoration
- **2006 - Venice, Italy**
 - Environmental security at ports and harbors
 - Decision Analysis





Outline

- **Summary of Eilat workshop on Environmental Security**
- **Summary of Thessaloniki workshop on MCDA and applications to coastal areas**
- **Example of WG work (Rick Wenning)**
- **Objective of this workshop and WGs**
- **Approach to Fun (Stefano Della Sala)**



**Goal of the Workshop in Eilat:
To present Risk Assessment
as a unified technique for selecting
environmentally sound policies for
environmental security applications**



NATO ARW Approach: Discussions, Consensus Summary



- About 35 participants from 11 countries
- Consensus summary: Working Groups on: (i) Environmental Security and (ii) Risk Assessment
- State of the art review (plenary and poster sessions)
- International perspectives with special emphasis on Mediterranean Region



Defining Environmental Security

- **Environmental issues are often security concerns:**
 - can result in environmental perturbations or triggers that can destabilize the status quo and result in a loss of regional, national, and local political, social, economic and personal security
- **“Environmental Security” is an ill-defined term**
- **Two key elements:**
 - repairing damage to the environment for human life support and for the moral value of the environment itself; and
 - preventing damage to the environment from attacks and other forms of human abuse
- More – Papers by Belluck et al. and presentation by Rick Wenning



Examples of Environmental Security Definitions:

“Environmental security reflects the ability of a nation or a society to withstand environmental asset scarcity, environmental risks or adverse changes, or environment-related tensions or conflicts.” (Chalecki No Date)

“Science-based case studies, which meld physical science with the discipline of political economy, are a suitable vehicle for forecasting future conflicts derived in some measure from environmental degradation” (McNeil 2000).

“Environmental Security is a state of the target group, either individual, collective or national, being systematically protected from environmental risks caused by inappropriate ecological process due to ignorance, accident, mismanagement or design.” (AC/UNU Millenium Project No Date)

"Environmental security is the state of protection of vital interests of the individual, society, natural environment from threats resulting from anthropogenic and natural impacts on the environment." (AC/UNU Millenium Project No Date)

WATER and Environmental Security



- Water market/trading
- Sea/brackish water desalination (approx\$0.3-0.5/per c.M. - - Ex. Plant)
- Large scale re-use of effluents
- Inter-boundary – transfer options (litani, desalted water, turkey).
- Comprehensive water demand management and conservation.
- Active psp,banks, donors.

After Saul Arlosoff

The Dead Sea Decline

- **The Dead Sea level is declining at a rate of one meter each year.**
- **Over the past 30 years the Dead Sea has decreased by 30 meters from its original level.**
- **The southern part of the Dead Sea has dried and separated from the northern basin.**



After Clive Lipchin

A Future for the Dead Sea Basin: Options for a More Sustainable Water Management

- **The overall objective of the project is to establish the scientific basis for a “more sustainable than today” water management and water-related land management in the Dead Sea basin.**
- **Measurable objectives of the project include:**
 - Development of a GIS-based database that contains harmonized and comparable physical, economic and social data.
 - Establishment of realistic development scenarios until about the year 2020.
 - Analysis of the current water management system and its driving force.
 - Establishment of criteria for essential water requirements for nature.
 - Analysis of socially, economically and environmentally sound alternatives for irrigated agriculture.

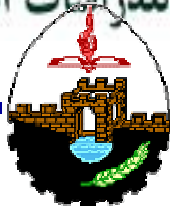


The Arava Institute for Environmental Studies

מכון הערבה ללימודי הסביבה

معهد وادي عربة للدراسات البيئية

Applied Research Institute
Jerusalem



معهد الأبحاث التطبيقية
القدس



EnviroConsult Office
Environment & Water Services

University of Newcastle upon Tyne

بيت لحم - ص.ب ٨٦٠ - شارع الكارنتاس - فلسطين - تلفون و فاكس ٧٤١٨٨٩ (٠٢)

After Clive Lipchin

Case Study: Industrial Accidents in Turkey

- **TUPRAS Izmit Petroleum Refinery (1999)**



Industrial Accidents: Reasons

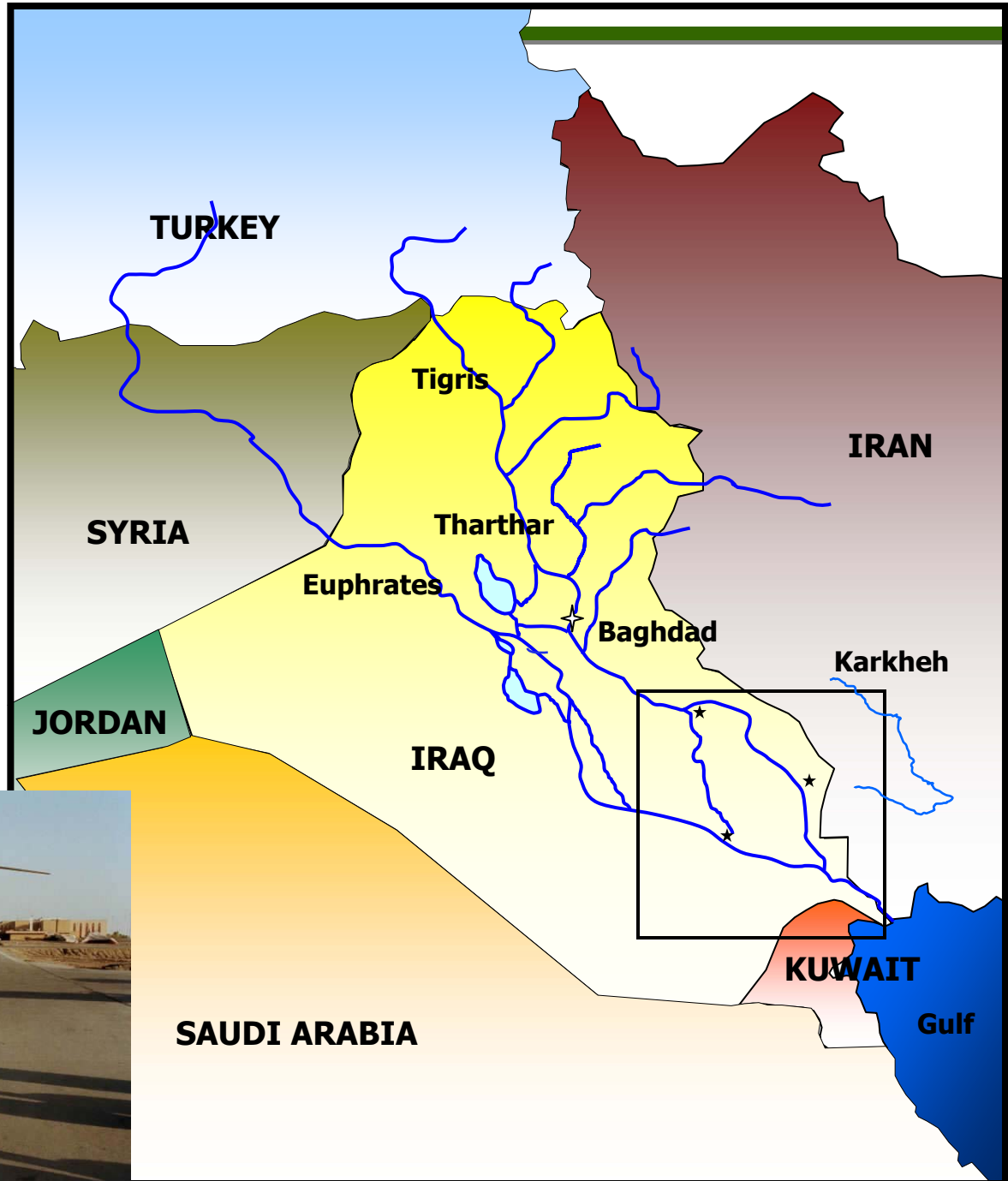
- 1. Deficient precautionary measures**
- 2. Insufficient inspection**
- 3. Lack of national regulations**
- 4. Proximity of settlements to the facilities**
- 5. Inadequate information to the public**

Living With Risk is a Matter of Choosing Between Risks



After Manfred Green

The Marshes of Southern Iraq

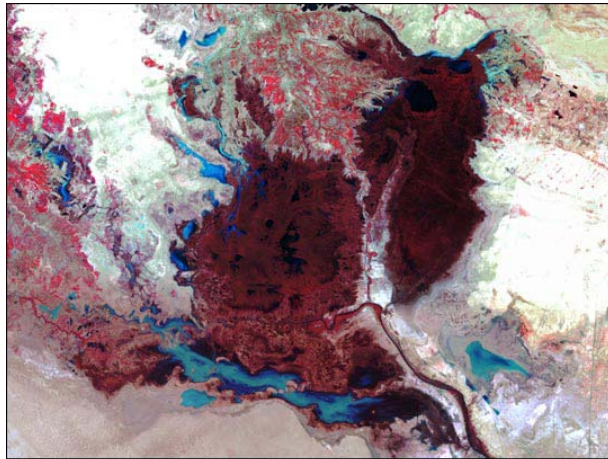


Marsh Arab settlements prior to drying out the wetlands

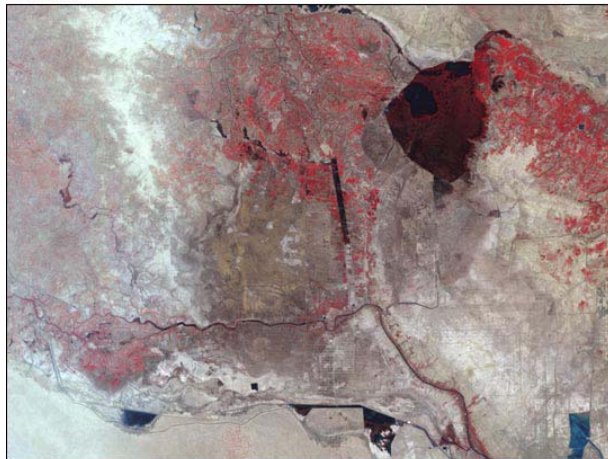




▶▶▶ Vanishing Marshes of Mesopotamia



1973-1976



2000

- Landsat satellite imagery reveals that in the last 10 years, wetlands that once covered as much as 20,000 square km (7,725 square miles).
- They have been reduced to about 15 percent of their original size.





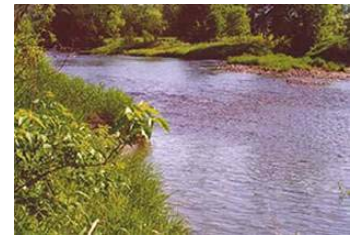
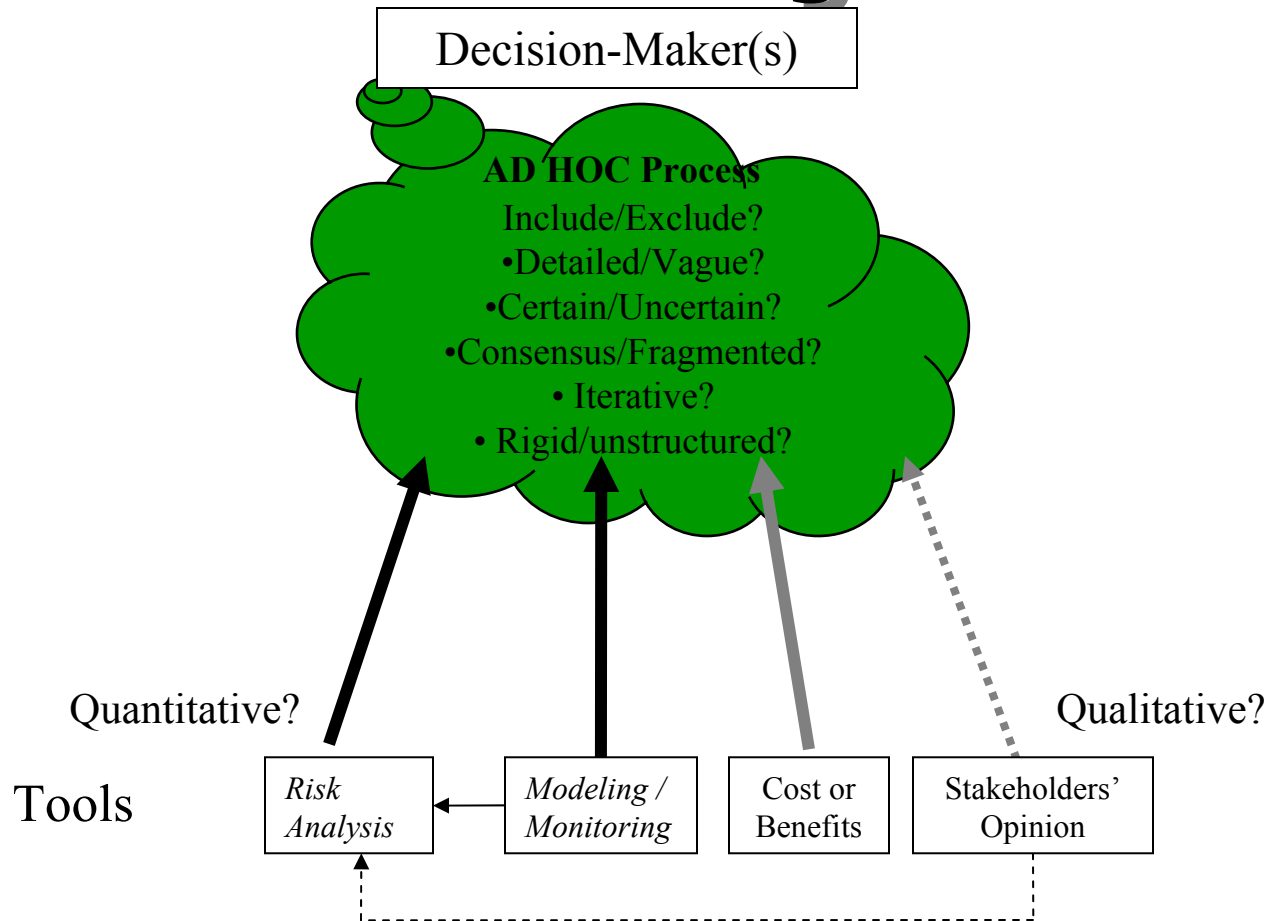
NATO-Advanced Research Workshop in Thessoloniki

- **Thessoloniki, Greece April 20-24, 2005**
- **Approximately 40 people**
 - Multi-national
 - Multi-disciplinary
 - Developing and Developed Perspectives
- **Excellent environment for new learning and cross-disciplinary interactions**
- **Nice hotel/Wonderful Food**





Challenges in Current Decision-Making Processes





Problem Complexity

- **Many problems that cannot be solved with traditional analytical approaches**
- **Characteristics**
 - Occur within a *social context*
 - Interlocking/overlapping issues
 - Shifting goal posts ... never finished...
 - No perfect solutions: “better or worse” more than “good/bad”
- **Examples**
 - Most large-scale environmental projects
 - Port security
- **Solution**
 - Discussion, consensus, accepting change, iterations
 - Top-down and bottom-up organization are both integral





Evolving Decision-Making Processes

Decision-Maker(s)



Decision Analytical Frameworks

- Agency-relevant/Stakeholder-selected
 - Currently available software
- Variety of structuring techniques
 - Iteration/reflection encouraged
- Identify areas for discussion/compromise

Decision Integration

Tool Integration

Risk Analysis

Modeling / Monitoring

Cost

Stakeholders' Opinion

Sharing Data, Concepts and Opinions





Workshop Related Activities

- **Pre-Workshop White Papers**
 - Environmental Security Review
 - Multi-Criteria Decision Analysis and Comparative Risk Assessment
 - Stakeholder interactions and engagement processes
- **Workshop Specialty Groups**
 - Environmental Security
 - Sediment/Navigation Issues
 - Ecological Restoration and Invasive Species
- **Post-Workshop Activities**
 - NATO-ARW Book Series





Working Groups

- **1: Restoration/Invasive Species**

- Co-Chairs: Payne/Neves; Rapporteurs: Goodwin
- Facilitator: Yoe
 - Sargsyan, Haruvy, Cooke, Ostrovskaya, Baba, Kapustka, Lotov, Kiker, Emara, Grebenkov

- **2: Dredging/Contamination**

- Co-Chairs: Bridges/Yatsalo; Rapporteurs: Satterstrom/Citron
- Facilitator: Biggs
 - Nicholson, Ramadan, Skei, Demin, Didenko, Giove, Ganoulis, Angelides, Linkov

- **3: Environmental Security**

- Co-Chairs: MacDonell/Wenning; Rapporteurs: Xenidis /?
- Facilitator: M. Kiker
 - Raissouni, Ignatavieius, Chiesa, Zaidi, Sinka, Lahdelma, Levner, Mannini, Belluck, Filip, Figueira



Upcoming NATO-ARW Workshops

- **NATO ARW- Risk Assessment for Critical Infrastructure, Croatia**
 - May 9-12, 2006
- **NATO ARW- Non-Contaminant Stressors**
 - Portugal,
 - Spring, 2007
- **Submitted proposal**
 - Nanotechnology (Portugal)
 - Water management (Armenia)
 - Water security (Turkey)

